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10/573,473	03/24/2006	Kiyoshi Kimura	287441US2PCT	9373
22850	7590	05/03/2007		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER BENITEZ, JOSHUA	
			ART UNIT 2829	PAPER NUMBER
			NOTIFICATION DATE 05/03/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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## Office Action Summary

Application No.

10/573,473

Applicant(s)

KIMURA ET AL.

Examiner

Joshua Benitez

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 03/24/2006.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 1-13 of U.S. Application 10/573,473, filed on 03/24/2007, are presented for examination.

#### ***Claim Objections***

2. Claims 1, 3, 12 and 13 are objected to because of the following informalities: in claim 1, line 13 "4" should be written as "four"; in claim 3, line 13 "4" should be written as "four"; in claim 12, line 10, "4" should be written as "four"; and in claim 13, line 12 "4" should be written as "four". Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

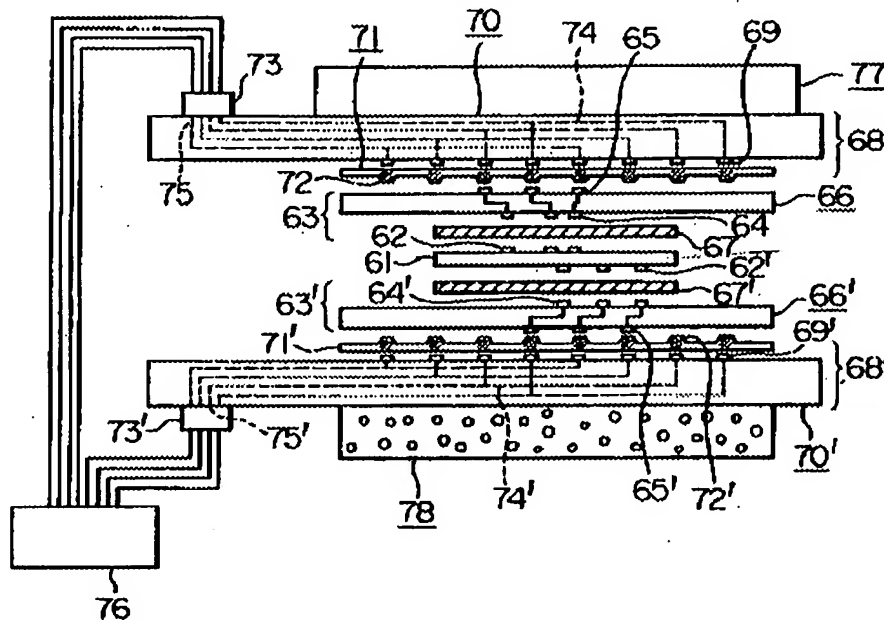
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2, 5 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura et al (U.S. Patent No. 5,672,978).

In re claim 1, Kimura '978 discloses in figure 9 an inspection apparatus for circuit board for inspecting the electrical properties of a circuit board (61) having a plurality of electrodes to be inspected (62) arranged in lattice, which comprises

an adaptor (63) having a wiring board (66) for connection, on the front surface of which a plurality of connecting electrodes (64) have been formed in accordance

with a pattern corresponding to a pattern of the electrodes to be inspected of the circuit board (61), which is an object of inspection, and an anisotropically conductive elastomer sheet (67) arranged on the front surface of the wiring board (66) for connection, and a pressing pin mechanism (68, 77) arranged on the back surface side of the wiring board for connection in the adaptor and having a great number of pressing pins (69) for pressing the adaptor.

**FIG. 9**

Kimura '978 does not specifically teach arranging the pressing pins in such a manner that at least one pressing pin is located within a rectangular region partitioned by linking central point of four adjacent connecting electrodes in the wiring board for connection when the pressing pin mechanism and the adaptor are seen through in a thickness-wise direction thereof.

However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have rearranged the pressing pins in a manner as to have at least one located within a rectangular region partitioned by linking central point of four adjacent connecting electrodes in the wiring board, since this would provide a uniform pressing force to allow a better connection for the electrodes and since it has been held that rearranging part of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

Regarding claim 2, Kimura '978 discloses, on the back of the wiring board (66) for connection in the adaptor (63), a terminal electrode (65) electrically connected to the connecting electrode (64) is arranged at a pressing position by at least one specified pressing pin (69), and an inspection electrode (contained in element 69) is formed on the tip of the pressing pin pressing the pressing position at which the terminal electrode is arranged.

In re claim 5, Kimura '978 discloses the circuit board (61), which is an object of inspection, having projected electrodes to be inspected (62).

As of claim 11, Kimura '978 discloses an inspection apparatus capable of performing an inspection process for circuit board (61) for inspecting the electrical properties of a circuit board (61) having a plurality of projected electrodes to be inspected (62) arranged in a lattice, which comprising

using an adaptor (63) having a wiring board (66) for connection and an anisotropically conductive elastomer sheet (67) arranged on a front surface of the wiring board (66) for connection, and a pressing pin mechanism (68, 77), on

which a great number of pressing pins (69) for pressing the adaptor have been arranged, and comprises the steps of:

arranging the adaptor (63) on the circuit board (61), which is an object of inspection, so as to bring the anisotropically conductive elastomer sheet (67) thereof into contact with the circuit board (61)

pressing the adaptor (63) by the respective pressing pins (69) of the pressing pin mechanism (68, 77) to bring the anisotropically conductive elastomer sheet (67) in the adaptor (63) into contact under pressure with the electrodes to be inspected (62) of the circuit board (61), thereby attaining an inspectable state that each of the electrodes to be inspected (62) of the circuit board (61) have been electrically connected to a tester,

wherein the wiring board (66) for connection in the adaptor is capable to be curved (given that it is arranged between elements 67 and 72 which have elastic properties) in such a manner that portions being applied with the pressing force by the respective pressing pins (69) and the respective electrodes to be inspected (62) are shifted in the pressing direction.

Kimura et al does not specifically disclose the pressing pin mechanism arranged in such a manner that at least one pressing pin is located within a rectangular region partitioned by linking central points of adjacent four electrodes to be inspected in the circuit board.

However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have rearranged the pressing pins in a manner as to

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have at least one located within a rectangular region partitioned by linking central point of four adjacent connecting electrodes in the wiring board, since this would provide a uniform pressing force to allow a better connection for the electrodes and since it has been held that rearranging part of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

With respect to claim 12, Kimura et al discloses a wiring board (66) for connection for intervening between a circuit board (61) having a plurality of electrodes to be inspected (62) arranged in lattice and a tester (76) to inspect the electrical properties of the circuit board (61), which comprises

a plurality of connecting electrodes (64) formed in accordance with a pattern corresponding to a pattern of the electrodes to be inspected (62) of the circuit board (61), which is an object of inspection, on a front surface thereof and a plurality of terminal electrodes (65) electrically connected to the connecting electrodes on a back surface thereof.

Kimura '978 does not specifically teach arranging the pressing pins in such a manner that at least one pressing pin is located within a rectangular region partitioned by linking central point of four adjacent connecting electrodes in the wiring board for connection when the pressing pin mechanism and the adaptor are seen through in a thickness-wise direction thereof.

However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have rearranged the pressing pins in a manner as to have at least one located within a rectangular region partitioned by linking central point

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of four adjacent connecting electrodes in the wiring board, since this would provide a uniform pressing force to allow a better connection for the electrodes and since it has been held that rearranging part of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

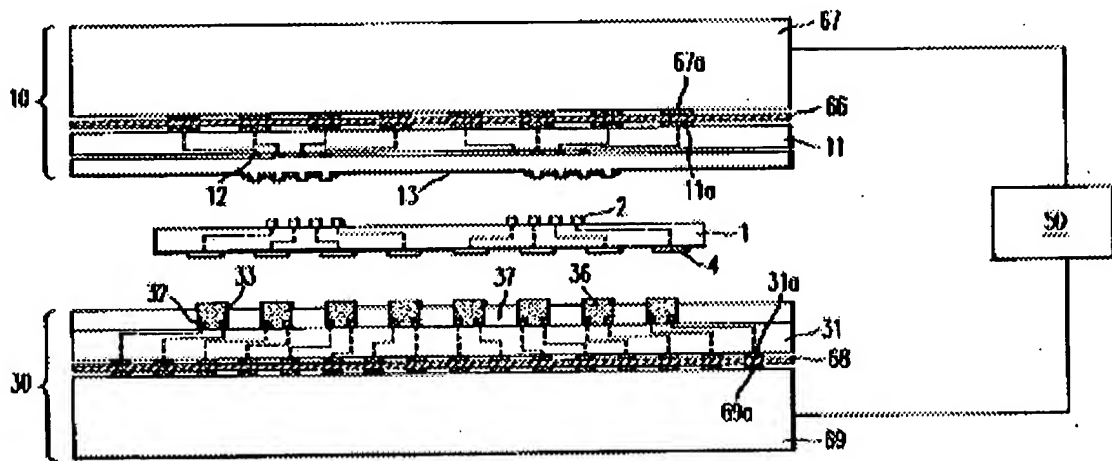
5. Claims 3-6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura '978 in view of Shimoda et al (U.S. Patent No. 6,297,652 B1)

With respect to claim 3, Kimura '978 discloses in figure 9 an inspection apparatus for circuit board for inspecting the electrical properties of a circuit board (61) having a plurality of electrodes to be inspected (62) arranged in lattice, which comprises an adaptor (63) having a wiring board (66) for connection, an anisotropically conductive elastomer sheet (67) arranged on the front surface of the wiring board (66) for connection, and a pressing pin mechanism (68, 77) arranged on the back surface side of the wiring board for connection in the adaptor and having a great number of pressing pins (69) for pressing the adaptor.

Kimura '978 does not specifically disclose plural pairs of connecting electrodes each composed of a connecting electrode for current supply and a connecting electrode for voltage measurement formed in a pattern corresponding to a pattern of the electrodes to be inspected of the circuit board and having the pressing pins in the pressing pin mechanism arranged in such a manner that at least one pressing pin is located within a rectangular region partitioned by linking central points of adjacent four pairs of connecting electrodes in the wiring board.

However, Shimoda '652 does teach in figure 27 the use of plural pairs of connecting electrodes each composed of a connecting electrode for current supply (32) and a connecting electrode for voltage measurement (33) arranged in a pattern corresponding to a pattern of the electrodes to be inspected (4) of the circuit board (1).

**FIG. 27**



It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have modified the connecting electrodes of Kimura et al using plural pairs of connecting electrodes, each composed of a connecting electrode for current supply and a connecting electrode for voltage measurement as taught by Shimoda et al, in order to provide an apparatus which can perform measurement of electrical resistance on electrodes to be inspected with high precision without damaging such electrodes. It would have also been obvious to one of ordinary skill in the art at the time the invention was made to have rearranged the pressing pins in a manner as to have at least one located within a rectangular region partitioned by linking central point of adjacent four pairs of connecting electrodes in the wiring board, since this would

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provide a uniform pressing force to allow a better connection for the electrodes and since it has been held that rearranging part of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

As of claim 4, Kimura '978 discloses on the back of the wiring board (66) for connection in the adaptor (63), terminal electrodes (65) arranged at pressing position by at least one specified pressing pin (69) selected from among all the pressing pins, and inspection electrodes (contained in element 69) formed on the tip of the pressing pin pressing the pressing position at which the terminal electrodes are arranged.

Kimura et al does not disclose the terminal electrodes on the back surface of the wiring board connected to any ones of the connecting electrodes for current supply and the connecting electrodes for voltage measurement.

However, Shimoda '652 does disclose terminal electrodes (31a) arranged in such a way as to be electrically connected to any ones of the connecting electrodes for current supply (32) and for voltage measurement (33).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have modified the connecting electrodes of Kimura et al using plural pairs of connecting electrodes, each composed of a connecting electrode for current supply and a connecting electrode for voltage measurement as taught by Shimoda et al, in order to provide an apparatus which can perform measurement of electrical resistance on electrodes to be inspected with high precision without damaging such electrodes.

In re claim 5, Kimura '978 discloses the circuit board (61), which is an object of inspection, having projected electrodes to be inspected (62).

Regarding claim 6, Kimura et al teaches that the wiring board (66) for connection in the adaptor is capable to be curved (given that it is arranged between elements 67 and 72 which have elastic properties) in such a manner that when the adaptor (63) is held under pressure by the respective pressing pins (69) in the pressing pin mechanism (68, 77) and the respective electrodes to be inspected (62) of the circuit board (61), which is the object of inspection, portions being applied with the pressing force by respective pressing pins (69) and the respective electrodes to be inspected (62) are shifted in the pressing direction.

As of claim 13, Kimura '978 teaches a wiring board (66) for connection for intervening between a circuit board (61) having a plurality of electrodes to be inspected (62) arranged in lattice and a tester (76) to inspect the electrical properties of the circuit board (61).

Kimura '978 does not specifically disclose plural pairs of connecting electrodes each composed of a connecting electrode for current supply and a connecting electrode for voltage measurement formed in a pattern corresponding to a pattern of the electrodes to be inspected of the circuit board and having the pressing pins in the pressing pin mechanism arranged in such a manner that at least one pressing pin is located within a rectangular region partitioned by linking central points of adjacent four pairs of connecting electrodes in the wiring board.

However, Shimoda '652 does teach in figure 1 the use of plural pairs of connecting electrodes each composed of a connecting electrode for current supply (32) and a connecting electrode for voltage measurement (33) arranged in a pattern corresponding to a pattern of the electrodes to be inspected of the circuit board (1).

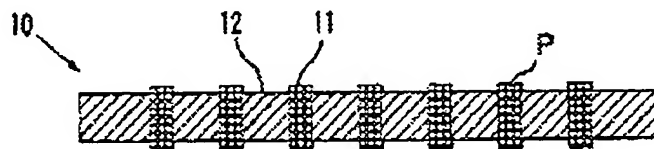
It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have modified the connecting electrodes of Kimura et al using plural pairs of connecting electrodes, each composed of a connecting electrode for current supply and a connecting electrode for voltage measurement as taught by Shimoda et al, in order to provide an apparatus which can perform measurement of electrical resistance on electrodes to be inspected with high precision without damaging such electrodes. It would have also been obvious to one of ordinary skill in the art at the time the invention was made to have rearranged the pressing pins in a manner as to have at least one located within a rectangular region partitioned by linking central point of adjacent four pairs of connecting electrodes in the wiring board, since this would provide a uniform pressing force to allow a better connection for the electrodes and since it has been held that rearranging part of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

6. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura ' 978 in view of Shimoda '652 as applied to claim 6 above, and further in view of Kimura et al (U.S. PGPub No. 2002/0060583 A1).

In re claim 7, the combination of Kimura '978 with Shimoda '652 discloses the claimed invention as discussed above except for teaching how the anisotropically conductive elastomer sheet is arranged.

However, Kimura '583 discloses in figure 1 the anisotropically conductive elastomer sheet (10) obtained by containing a great number of conductive particles (P) exhibiting magnetism in an elastic polymeric substance (page 3, paragraph [0051]), and the conductive particles are oriented so as to align in a thickness-wise direction of the sheet (10), thereby forming a plurality of chains by the conductive particles.

Fig. 1



It would have been obvious to one having ordinary skill in the art at the time the invention was made to have obtained the anisotropically conductive elastomer sheet as taught by Kimura '583 in order to obtain a sheet capable of retaining the required conductivity over a long period of time achieving a long service life.

Regarding claim 8, Kimura '583 discloses the anisotropically conductive elastomer sheet is such that chains by the conductive particles are formed in a stated dispersed in a plane direction (page 3, paragraph [0051]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the invention with an anisotropically conductive elastomer sheet as the one disclosed in Kimura '583 in order to provide a sheet capable

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of executing inspection of a device with high efficiency and stably retaining a good electrically connected state.

With respect to claim 9, Kimura '583 teaches the anisotropically conductive elastomer sheet having a thickness of 0.03mm-2mm, which reads on the claimed range of 30-300 $\mu$ m.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have provided the invention with an anisotropically conductive elastomer sheet as the one disclosed in Kimura '583 in order to provide a sheet capable of retaining the required conductivity over a long period of time even when it is used repeatedly over many times and so a long service life can be achieved owing to its high durability.

As of claim 10, Kimura '978 discloses the adaptor (63) having an anisotropically conductive sheet (71) arranged on the back surface of the wiring board (71) for connection.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Diller et al (U.S. Patent No. 5,109,596) discloses a device for electrically connecting contact points of a test specimen (circuit board) to the electrical contact having a plurality of contacts arranged on each side thereof.

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Mozzeta et al (U.S. Patent No. 6,359,452) discloses a fixture for testing an electronic assembly including a printed circuit board with a pin housing wherein an array of electrical pins are mounted on.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua Benitez whose telephone number is 571-270-1435. The examiner can normally be reached on M-Th, 7:30-5:00; F, 7:30-4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ha Nguyen can be reached on 571-272-1678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Joshua Benítez  
April 23, 2007

HA TRAN NGUYEN  
SUPERVISORY PATENT EXAMINER